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14. ABSTRACT In the summer of 2003, Dr. Winkenwerder charged senior leaders to develop business plans to share medical capabilities between all branches of service. The San Antonio Multi-Service Market established the Consult and Appointment Management Office to consolidate resources and optimize healthcare delivery. The purpose of this analysis was to evaluate the impact of the Consult and Appointment Management Office (CAMO). Direct cost of the CAMO included set up costs of \$1.8 million and annual operating costs of \$1.9 million. Patients reported decreased satisfaction with the ease of making appointments by phone (F=6.881,p<.01) and the number of days between making an appointment and being seen by provider (F=8.852,p<.05).					
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Army-Baylor University Graduate Program  
in Health Care Administration

Graduate Management Project  
Post Implementation Analysis of the San Antonio Multi-Service Market Consult and  
Appointment Management Office (CAMO)

Presented to:

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By

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## Abstract

In the summer of 2003, Dr. William Winkenwerder charged senior leaders of the military healthcare system to develop business plans to share capabilities between all branches of service. The San Antonio Multi-Service Market established the Consult and Appointment Management Office in November 2004, to consolidate resources and optimize healthcare delivery. The purpose of this analysis was to develop a framework to evaluate the impact of the Consult and Appointment Management Office (CAMO) on the delivery of healthcare in the San Antonio Multi-Service Market. The study used Kissick's Iron Triangle as the framework for evaluation. The total direct cost of the CAMO included set up costs of \$1.8 million and annual operating costs of \$1.9 million. Descriptive and inferential statistics were used to compare changes in baseline data for quality and access measures. Patients reported decreased satisfaction with the ease of making appointments by phone ( $F = 6.881$ ,  $p < .01$ ) and the number of days between making an appointment and being seen by provider ( $F = 8.852$ ,  $p < .05$ ). No significant changes were identified for telephonic access standards. Management must continue to monitor performance metrics to evaluate the impact of the Consult and Appointment Management Office.



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### Disclaimer

The views expressed in this study are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, Brooke Army Medical Center, or the United States Government.

### Statement of Ethical Conduct in Research

The author declares no conflict of interest or financial incentives in any product or service mentioned in this analysis. The confidentiality of individuals whose data may have been used in this study was protected at all times and under no circumstances will be discussed or released to outside agencies.



## Introduction

In the summer of 2003, Dr. William Winkenwerder charged senior leaders of the military healthcare system to develop business plans to share capabilities between all branches of service. In response to Dr. Winkenwerder's directives and the TRICARE Governance Plan of 2003, Brigadier General Green then commander of Wilford Hall Medical Center, and Brigadier General Fox then commander of Brooke Army Medical Center, agreed to coordinate Air Force and Army medical resources. The agreement led to the formation of the San Antonio Multi Service Market (SAMSM). The purpose of the San Antonio Multi Service Market was to consolidate resources, eliminate redundancy, and optimize the use of the military healthcare facilities (San Antonio Multi-Market Office, 2003).

In order to support the objectives of the SAMSM, Brigadier General Green and Brigadier General Fox proposed the creation of the Consult and Appointment Management Office (CAMO) to the Surgeons General of the Air Force and Army. The Surgeons General directed the establishment of the CAMO on July 19, 2004. Prior to the CAMO, appointment management was handled primarily at the clinic level. Consults had extremely limited administrative oversight. Wilford Hall Medical Center and Brooke Army Medical Center had independently established systems for central appointing. However, the majority of clinics exercised the option not to use the central appointing systems. Further, the systems lacked the ability to coordinate medical resources in the multi-service market and provided inadequate management of consults and referrals. The CAMO addressed these deficiencies by consolidating operations into one central organization with the ability to view appointment templates and schedule patients at all

military treatment facilities in the local market. Two departments of the CAMO were dedicated to actively manage consults and referrals.

### *Conditions that Prompted the Study*

The CAMO is a unique organization in the military healthcare system. Although other multi service markets are considering implementation of similar operations, no other centralized appointment and consult management service of this scope exists in the military healthcare system (S. Graham, personal communication, May 25, 2006). Performance measures are closely monitored internally and by the SAMSM. However, no formal studies have examined the impact of the CAMO in terms of value added to the delivery of healthcare. Advances in information management systems and call distribution systems have facilitated the collection and processing of data. Post-implementation data are now available to analyze the performance of the CAMO.

### *Statement of the Problem*

The problem statement for this study is to determine the impact of the Consult and Appointment Management Office (CAMO) on health care delivery in the San Antonio Multi Service Market since implementation in November 2004. The specific objectives for this analysis are listed below:

1. Review the mission and objectives of the CAMO
2. Review literature pertaining to consult and referral management, central appointing, and aspects of patient satisfaction related to appointments and consults.
3. Define and observe the standard operating procedures for the CAMO.

4. Identify key assumptions and limitations of the analysis.
5. Gather and analyze data related to referral management, telephonic access standards, and patient satisfaction.
6. Determine if there was a significant change in referral management, telephonic access standards, and patient satisfaction after implementation of the CAMO.
7. Report findings and prepare recommendations for further evaluation.

### Literature Review

#### *Mission of the Consult and Appointment Management Office*

The SAMSM serves over 212,000 eligible beneficiaries and provides healthcare for more than 1.3 million outpatient encounters at military treatment facilities, annually. The workload within the SAMSM generates 1.6 million relative value units (RVU) and 34,500 relative weighted products (RWP) each year. The SAMSM captures 88% of the outpatient workload and 96 percent of the inpatient workload within military treatment facilities (Cuda, 2006, January). The CAMO is a tremendous asset for coordinating resources in the direct care system.

The CAMO receives an average of 40,000 calls each month and schedules more than 30,000 appointments monthly. Administrative oversight is also provided for approximately 1200 deferrals to the network on a monthly basis. The CAMO manages 95 percent of specialty care consults in the SAMSM, scheduling more than 700 external consults monthly. Appointment scheduling services are provided to over 100 clinics in the local market (Cuda, 2006, January). The CAMO does not provide scheduling or reporting services for infectious disease clinics or behavioral health clinics. A select few



clinics retained the right to schedule appointments internally, including BAMC Pulmonary Medicine.

The mission of the CAMO is three-fold. The office serves as (1) a central specialty, referral, and primary care focal point for all health care appointing in the San Antonio Multi Service Market, (2) a single source for external medical treatment facilities to access San Antonio Multi Service Market health care resources, and (3) a primary reporting mechanism for specialty care results for patients seen in the network (Cuda, 2006, January). The primary objective of the CAMO is to maximize use of the direct care system. Additionally, the CAMO was designed to recapture network workload, reduce high-dollar network referrals, and improve the administrative process for referrals (San Antonio Multi-Market Office, 2004).

#### *Organizational Structure and Operations*

Staffing, resources, and funding for the CAMO are split between the Air Force and Army. The Memorandum of Agreement between Wilford Hall Medical Center and Brooke Army Medical Center (BAMC) outline the responsibilities of the Air Force and Army. The CAMO employs general schedule (GS) employees and contractors under both services. The Air Force provides 60 percent of the staffing based on enrollment demographics for beneficiaries of the SAMSM. Combining the two previously existing, service-specific organizations into one functional unit presented the first challenge. Managing the service-specific personnel systems and contracts continues to present daily challenges to the five administrators of the CAMO.

The CAMO uses a vertical organizational structure to align departments by function. Appendix A illustrates the organizational structure. The structure provides efficiencies through specialization, especially when considering the lack of standardization for appointing procedures among the clinics and facilities. The CAMO employs 63 full time employees to accomplish the mission. In addition to the three departments previously discussed, the CAMO also has a department designed to receive and distribute consults. Eight part-time employees provide flexibility to manage peak call volume periods.

Internal consults and external consults are the primary departments of the CAMO. The internal consult department focuses on primary care appointments and referrals within the beneficiary's enrolled military treatment facility. The department also has the capability of scheduling consults at other military treatment facilities within the SAMSM. Agents within the internal consult department have been further specialized to increase familiarization with service-specific and clinic-specific standard operating procedures. Currently, the CAMO serves eight primary care clinics from Wilford Hall Medical Center, six primary care clinics from Brooke Army Medical Center, and four primary care clinics from Randolph Air Force Base. Keeping appointments within the direct care system saves resources, maintains continuity of care, and improves graduate medical education opportunities (S. Graham, personal communication, May 25, 2006).

Appendix B illustrates the process for internal consults. All internal consults are required to be entered electronically in AHLTA. The CAMO routes the referral to the appropriate team or agent based on specialization. Appointing within the beneficiary's enrolled treatment facility is the first priority. If the enrolled treatment facility is not



available, the CAMO attempts to appoint based on geographic proximity, patient preference, and service affiliation. Patient appointing follows clinic-specific standard operating procedures. All clinics have the right to review consults before accepting. Once accepted by the clinic, the CAMO contacts the patient to schedule the appointment.

If access standards can not be achieved within the direct care system, the consult is routed to the external consult department. All appointments and consults that are deferred to the network are managed by the external consult department. Following medical management review, consults are forwarded to the managed care support contractor. The CAMO does not make appointments with network providers. The external consult department also manages the right of first refusal process and retrieval of results from network providers. Staff members are cross-trained to augment other departments during peak call volume periods.

The CAMO plays a critical role in the right of first refusal (ROFR) process within the SAMSM. The right of first refusal process is one management tool that supports the optimal utilization of the direct care system. The process requires the managed care support contractor to notify the direct care system of additional treatment needs of beneficiaries referred to the network. An enrolled beneficiary may only be deferred to the TRICARE network if a military treatment facility lacks the capacity to provide the standard of care (Health Affairs, 2005). Current TRICARE contracts provide incentives for contractors and the military healthcare system to maximize the use of the direct care system.

Aggressive management of the right of first refusal process in the SAMSM has led to an average acceptance rate of 78 percent. Military treatment facilities are required



to provide the managed care support contractor with accurate listings of clinics with capacity and capabilities to accept referrals from the network (Health Affairs, 2005). Up to date and accurate listings expedite the referral process. Military treatment facilities can eliminate unnecessary wait times for beneficiaries by not listing services that do not have capacity to receive external referrals. The SAMSM monitors clinic utilization and right of first refusal rates on a monthly basis. Adjustments to the availability listing are updated as needed to maximize the use of the direct care system and minimize unnecessary administrative procedures for beneficiaries.

The CAMO provides the central node to coordinate available resources. Clinics review all consults to determine whether or not capacity exists to accept a referral. Decisions are made by clinical staff, not agents of the CAMO, as to the acceptance or deferral of a consult. Appendix C illustrates the process for the right of first refusal.

Further, the CAMO provides a single source for military and network providers to report results of consults. This facilitates continuity of care and maintenance of the beneficiary's electronic health record. Timely information exchange between primary care physicians and specialists is critical to the continuity of care in a referral process (Murray, 2002). The Office of the Assistant Secretary of Defense, Health Affairs issued standards for the referral process to support the standard of care. The right of first refusal policy requires the military treatment facility to provide clinical feedback to the referring civilian provider within 10 business days of the appointment. The standards also require the military treatment facility to accept or refuse the referral within 24-hours. The response to the managed care support contractor should be as soon as possible, but not more than one business day (Health Affairs, 2005). The CAMO coordinates the

reporting process and provides administrative oversight to ensure results of consults are completed by network and military providers.

Appointment and consult protocols are clearly defined by the management of the CAMO. However, clinics have maintained autonomy with respect to standard operating procedures for appointing. The business rules of the CAMO must capture the individualized nature of the 100 clinics within the SAMSM. Some best business practices are being adopted to standardize the appointing process, yet the nature of healthcare requires a certain level of customization at the clinic level (S. Graham, personal communication, May 25, 2006).

Agents of the CAMO have access to AHLTA. All appointments are scheduled directly into the same electronic system used by the clinics. Entries by the CAMO become a part of the beneficiary's health record. Appointment templates in AHLTA must be released by the individual clinics in order to be available for CAMO agents to schedule. Initially, this presented a problem because templates were not available.

#### *Industry Trends for Appointing and Referral Management*

Data for appropriate measures must be collected and analyzed to determine the positive or negative impact of changes to the appointment and referral process. A post-implementation decision audit should consider the waiting time between referral and appointment with specialist (Murray, 2002). Analysts for the SAMSM currently track two separate metrics to monitor this information. The time from the initiation of the referral until an appointment is scheduled is the first metric. The wait time from the initiation of the referral until the actual appointment with the specialist is the second



metric. The TRICARE access standards state that a specialty appointment must be available within 28 days of the referral. The data provide a measure for the adequacy of access within the network. However, the integrity of data prior to 2004 remains suspect, as it was not specifically monitored or reported on a regular basis.

Patient satisfaction provides a key measure of the success of any health care initiative. Murray (2002) stresses the importance of evaluating changes in patient satisfaction associated with involvement in the appointment and referral process. Aggregate patient satisfaction data are available through the TRICARE Customer Satisfaction Survey (CSS). The National Research Corporation administers the Customer Satisfaction Survey on a weekly basis to patients seen in clinics within the continental United States and overseas. Patients rate the quality of the healthcare encounter using 17 multiple choice questions. A copy of the survey is included in Appendix D.

The appointing system for the military healthcare system has been scrutinized for its connection to patient satisfaction. The United States General Accountability Office (2000) conducted an inquiry entitled Military Health Care: Factors Affecting Contractors' Ability to Schedule Appointments. The report cited confusing appointment procedures which led to inefficiencies and failure to provide access within the standard for patient care. Confusion and frustration continue to be a problem when beneficiaries attempt to schedule appointments. In an article published in Military Medicine, Colonel Bonnie Jennings (2005) discussed the appointment obstacle course that beneficiaries must negotiate to obtain an appointment. A common theme was reported that referenced an unproductive cycle of calling and recalling for appointments. Beneficiaries were being told that all appointments were full and that the new schedule of appointments was not



available. When the beneficiary called back at the recommended time, the new appointment schedule was already full.

Administrators monitor appointment templates and attempt to optimize the mix of appointment types. Fill rates provide a strong indicator of how the appointment templates are meeting the demand of the beneficiary population. To determine the fill rate, the scheduled appointments are divided by the total number of appointments available. The ideal fill rate is between 90 percent and 95 percent (Buttz, 2004). Maintaining the appointment template six weeks into the future has posed a problem for many clinics. Managing the availability of a template with the optimal mix can alleviate patient frustrations.

The medical industry has been attempting to define best business practices in patient appointing. According to the research of Kent Seltman (2005), "There is no best practice in appointment management." Seltman works at the Mayo Clinic in Rochester, Minnesota as the director of marketing. In his article in *Marketing Health Services*, Seltman cited four problem areas with patient appointing system. The problems involved triage criteria, appointing staff, customer service, and a bias to say no. The triage issue relates to the fact that reviewing the records of referred patients takes time. Reviewing referrals is not billable. Providers stay busy with revenue-generating workload. A patient who is forced to wait may seek care elsewhere, based on medical need or impatience. The end result is a lost appointment. Appointment staffing refers to the competency of the agents designated to schedule appointments. Appointment clerks are often low-pay, entry-level positions. Levels of training in medical terminology vary greatly. Staff turnover is a common problem among entry-level positions, as well.

Customer service is an extension of staffing decisions and training. Seltman's research indicated problems with simple details of customer service including common courtesies, conversational tone, and number of rings before a call is answered. The bias to say no stems from a fear of making a mistake. Instead of scheduling an incorrect appointment, clerks choose not to make the appointment. Training and supervision of the appointing staff can improve three of the four problem areas (Seltman, 2005).

The TRICARE Management Activity publishes the telephonic access standards and benchmarks for the military healthcare system. Telephonic and internet based customer service standards have become increasingly competitive in the private sector. Healthcare systems for customer service generally lag the private sector (Seltman, 2005). The military healthcare system, however, established a benchmark to equal the corporate standard for answering a telephone, which is within four rings or 30 seconds (TRICARE Management Activity, n.d.). Hold time is defined as the time after the call is answered until the caller speaks to an appointment scheduler. The TRICARE benchmark for hold time is two minutes. The abandoned call rate is the percentage of calls that hang up after the benchmark for answering the telephone. The current benchmark for abandoned call rate is five percent or less. The final benchmark is process time of less than six minutes for large treatment facilities. Process time is measured by the time it takes a scheduler to make the appointment and complete the call. The TRICARE Management Activity maintains benchmarks as indicators of efficiency, training, and required staffing levels for appointment schedulers (TRICARE Management Activity, n.d.).

The complexity of referrals and consults requires full-time management for the process even in small family practices. John Spicer (1998), associate editor for Family



Practice Management, recommended referral management by dedicated staff members trained in the details of the process. He also recommended two suggestions for improving referral management. Standardization of the referral requirements, forms, and protocol was the first recommendation. Developing shortcuts or matrices to navigate the process was the second recommendation. The CAMO accomplishes both of Spicer's recommendations. While continuing to push for standardization among the clinics, the CAMO has heightened visibility of best practices and potential problem areas. The CAMO established a format for standard operating procedures that include a matrix for all appointment types and an algorithm format to assist in matching patients to the appropriate clinic.

Current trends in the Department of Defense and the military healthcare system necessitate heightened accountability for all types of resources. The global war on terror, soaring medical inflation, and increased medical benefits to service members have lead to a number of changes in the military healthcare system. In 2005, the Surgeon General of the Army, Lieutenant General Kevin Kiley, directed increased emphasis on workload accountability, coding accuracy, and data quality. In several memorandums to the Regional Medical Commands, Lieutenant General Kiley outlined his vision and expectations for CHCS II implementation (Army Medical Command, 2005, January). He issued specific implementation guidance for the enterprise plan to improve coding (Army Medical Command, 2005, June). The emphasis was tied to the transition of the Army Medical Department from the traditional form of budgeting to a prospective payment system.



The movement to the electronic health record has influenced significant changes in data collection and managerial behavior. Improved data quality combined with the proliferation of information management systems to collect and process data provide managers the opportunity to make sound business decisions. However, the improvement of data quality limits this study's ability to make accurate comparisons between pre-implementation and post-implementation performance.

### *Purpose*

The purpose of this analysis was to develop a framework to evaluate the impact of the Consult and Appointment Management Office (CAMO) on the delivery of healthcare in the San Antonio Multi-Service Market.

## Methods and Procedures

### *Research Design*

The research design of this analysis was based on an exploratory case study. As recommended by Yin (1989), the composition of the study followed a linear-analytic structure. The general outline of this case included a statement of the problem, explanation of the analytical methods employed, findings of the analysis, and conclusions and recommendations. *Case Study Research: Design and Methods* by Robert K. Yin provided the primary reference for this study's methods and procedures.

Three key factors contributed to the selection of an exploratory case study as the appropriate format for this analysis. First, the CAMO is a contemporary issue for which limited information exists, especially within the Military Healthcare System. The San

Antonio Multi Service Market was the first and only organization to centrally manage consults, referrals, and appointing of this scale in the Department of Defense. Second, the lack of concrete boundaries and contextual relationships posed a major challenge for this analysis. Finally, the variables, to be defined in the following section, were not able to be manipulated for this study. Although additional justification exists, Yin made specific reference to these factors in his definition of an exploratory case study.

### *Sources of Information*

Multiple sources of data were used for this study. Yin (1989) outlined six sources of evidence and recommended using all relevant sources available to increase content validity. The six sources include: documentation, archived records, interviews, direct observations, participation-observation, and physical artifacts. Physical artifacts were not used for this analysis.

This study included an extensive review of documentation. The literature review involved Ovid, MedLine, and Google searches for journals articles, news clippings, and similar studies. The TRICARE Management Activity provided the primary source for policy guidelines, and standards. Local memorandums, reports, and presentations by the CAMO and SAMSM provided detailed information at various levels of operation. Documentation provided the largest volume of background information.

Archived records generated the majority of empirical data for analysis. Data from the following computer systems were employed: Composite Health Care System (CHCS), the M2 Information Data Base, and the local Automated Call Distribution Systems. Patient satisfaction data were pulled from the Customer Satisfaction Survey

database maintained by Dr. Mangelsdorff. The database provided patient satisfaction scores on a monthly basis for all clinics in the SAMSM. The Automated Call Distribution System provided historical and current average patient hold times, call abandonment rates, and call volumes. CHCS and M2 provided data on consult reporting and administrative closure rates. Population and sample demographics were also pulled from M2.

Interviews were conducted with key personnel of the CAMO, Department of Health Care Operations, and TRICARE Regional Office. The interviews involved open-end questions concerning experiences, challenges, successes, opinions, and recommendations. The primary purpose of the interviews was to gain general information and understanding about the CAMO.

Direct observation was also used for this study. The CAMO's current phone system enables an authorized third party to monitor calls. The author spent one week monitoring calls in each department of the CAMO. This established a firm understanding of the standard operating procedures, as well as the challenges faced by operators required to navigate the inconsistent and complex appointment templates. The author also employed participant observation while making three personal appointments during the study.

### *Methodology*

The Ten Steps for Hypothesis Testing – Functional Form Statistics (Finstuen, 2004) will provide the format to analyze the statistical significance of relationships between the variables. Data will be entered into the Statistical Package for the Social



Sciences (SPSS) software to compute descriptive and inferential statistics. Graphic summaries, correlations, trend analysis, and analysis of variance will be used to evaluate the impact of the CAMO.

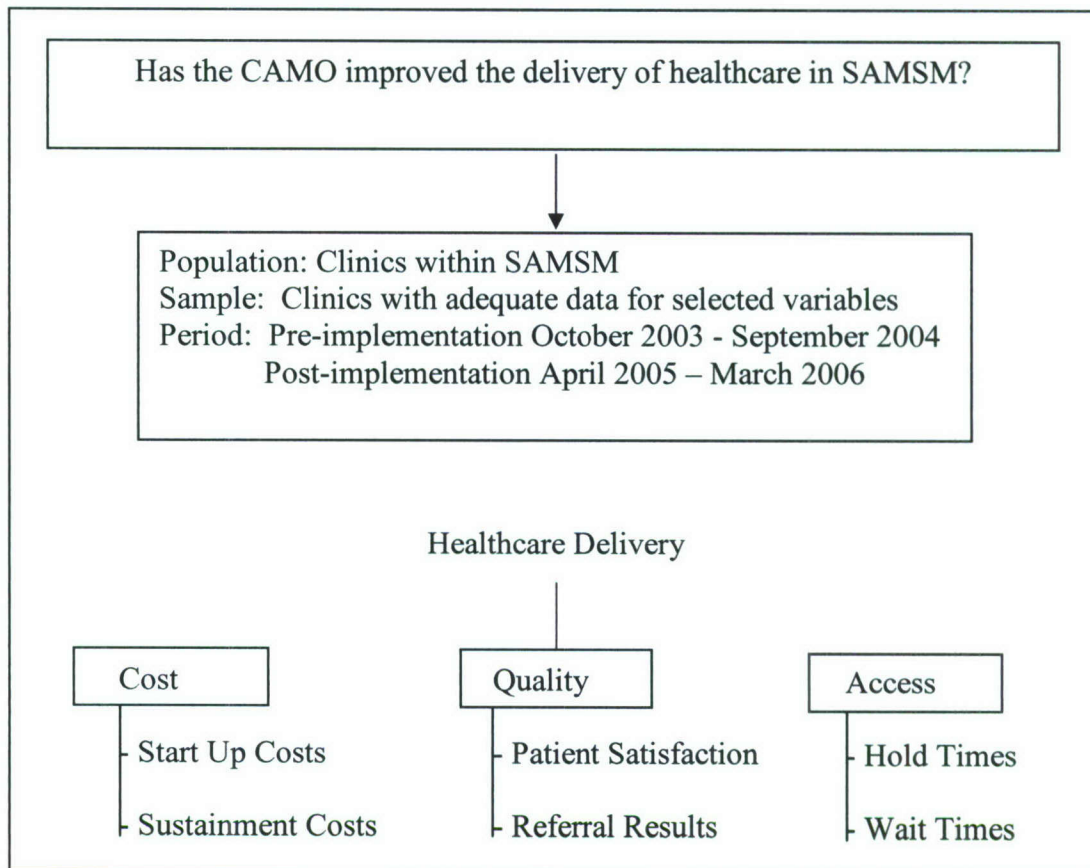
The unit of analysis is defined by three characteristics including: social context, time, and space. The social context for this study will focus on data at the clinic level. Two twelve-month time periods will be used. Fiscal year 2004 will provide the baseline for measurements before the implementation of the CAMO. Data for post-implementation will be based on performance from April 2005 through March 2006. The second time period represents the most current and complete data available for the study. Both time periods will reflect the natural seasonality that occurs over a 12-month period. The space will include all clinics within the SAMSM.

The CAMO serves as a tool to optimize use of the direct care system in the SAMSM. Therefore the population of this study includes all clinics within the SAMSM from October 2003 through March 2006. The sample will include all clinics within the SAMSM with adequate levels of data for selected variables during both time periods to support statistical analysis.

### *Operational Definitions of Variables*

This study will examine aspects of cost, quality, and access to determine the impact of the CAMO on healthcare delivery in the San Antonio Multi Service Market.

*Figure 1* represents the proposed model for this study.



*Figure 1: Conceptual model of case study*

The analysis of costs will focus on payroll and personnel efficiencies. The one-time setup costs will also be investigated. Determinations related to quality will be based on patient satisfaction and referral management. Patient satisfaction indicators will be pulled from the Military Healthcare System Monthly Customer Satisfaction Survey. Referral management measures from M2 and CHCS will indicate continuity of care between primary and specialty providers. Rates for resulted consults and administratively closed consults will be analyzed. Access to the healthcare system will focus on telephonic access to schedule appointments. A complete listing of the operational definitions for measures and variables are included in Appendix E. Although

data are available on a daily basis for some variables, this study will use monthly averages, unless otherwise stated, to standardize the analysis.

Variables for this study have been chosen based on the literature and recommendations of key management personnel from the CAMO. Certain relationships concerning the variables have been proposed. This study will attempt to validate these relationships in order to determine the impact of the CAMO on the delivery of healthcare in the SAMSM.

The first hypothesis ( $H_{a1}$ ) states the CAMO improved access to healthcare by decreasing average telephone hold times for patients attempting to schedule appointments. A null hypothesis ( $H_{01}$ ) will be tested to show that average hold times did not change after implementation of the CAMO. The second hypothesis ( $H_{a2}$ ) states the CAMO improved quality of healthcare by decreasing the rate consults being administratively closed. This study will test a null hypothesis ( $H_{02}$ ) stating the rate consults being administratively closed did not change after implementation of the CAMO. The last hypothesis ( $H_{a3}$ ) states the CAMO improved patient satisfaction scores. The null hypothesis ( $H_{03}$ ) states that patient satisfaction did not change after implementation of the CAMO.

To evaluate the validity of the null hypothesis for each of the independent variables, the significance must be more than the set decision level. For all of the independent variables the decision level was established at  $\alpha = .05$ . Significance for any of the null hypotheses measuring more than .05 suggests that the relationship occurs by chance, rather than influences of the independent variable. The null hypotheses can only be rejected if the significance is .05 or less.



*Reliability and Validity Concepts*

Reliability and validity describe the quality of measurements. In this analysis, the primary sources of data come from professionally managed databases and automated systems. The automated systems have specifically defined operational definitions of the data. A key assumption in this analysis is that the data in the automated systems were entered accurately and provide a true representation of reality. Consulting with the subject matter experts from the CAMO and SAMSM helped to establish construct validity. The operational definitions in this analysis are consistent with the definitions used for routine monitoring and evaluation of the CAMO.

*Assumptions and limitations*

As stated in the literature review, the military healthcare environment has experienced significant changes since 2003. A number of factors have influenced changes in policy, corporate culture, and managerial behavior. The factors include:

1. A transition to a new generation of TRICARE contracts
2. Unprecedented command emphasis on workload accountability, data quality, and coding accuracy
3. Implementation of AHLTA and the electronic health record
4. Proliferation of information technology and management systems
5. Advances in automated call distribution systems
6. Budgetary constraints associated with the global war on terror and the escalation of medical inflation

7. Expansion of healthcare benefits packages to Department of Defense beneficiaries

In such a dynamic environment, isolation and measurement of a specific components present serious challenges. Some of the factors have positive influences on productivity, efficiency, and patient satisfaction. Other factors may create a negative effect. Pre-implementation and post-implementation data do not necessarily represent like comparisons. Although the intent of this analysis was to produce a clean, quantitative evaluation of the impact of the CAMO, the results will require a qualitative interpretation.

One significant limitation for this study involves data quality and availability for measures prior to the implementation of the CAMO. Telephonic wait times were recorded, but rarely reported to senior management. Previous automated call distribution systems lacked the capability for managerial oversight. Incremental upgrades to the automated call distribution systems and organizational structure of the CAMO created incremental impacts that this analysis does not capture.

The previous referral process poses an additional challenge. Prior to the implementation of the CAMO and the electronic health record, referrals were often entered into the paper record and electronically into the Composite Health Care System (CHCS). However, providers often entered the results of referrals only in the paper record. The electronic record was not always updated. Therefore, the electronically entered referral would reflect an administrative closure after 90 days, even though the standard of care was delivered to the patient. The implementation of the electronic health record eliminated the redundancy of referral entry since all entries and results are

recorded electronically. The data available for analysis are from the electronically entered referrals. The rate of administrative closures will be higher in the pre-implementation period due to the disparity between referral entry and resulting.

Minor variations in productivity due to specific events have been identified within the period of analysis. The implementation of AHLTA is the most significant factor. During implementation, the number of available appointments decreased to accommodate staff training. The benefits gained in coding accuracy may influence changes in the data, although the standard of care and provider productivity remain constant. The cumulative effect could produce variations in patient satisfaction. Since patient satisfaction scores tend to be consistent for the overall episode of care, isolating satisfaction with hold times and access may be skewed.

## Results

This analysis provided a framework to evaluate the impact of the Consult and Appointment Management Office (CAMO) on the delivery of healthcare in the San Antonio Multi-Service Market. It operationally defined variables and measures used to further evaluate performance. The methodology may be tailored for a post-implementation analysis of a similar project or service line.

The findings and results focused on three factors of the healthcare delivery system, commonly referred to as the iron triangle of healthcare. Shi and Singh (2004) described the iron triangle as an evaluation framework to measure effectiveness, efficiency, and equity. The three factors of the iron triangle are cost of service provided,



quality of care, and access to care. While the findings focused on quantitative results, qualitative interpretations are also presented. Certain aspects of healthcare delivery can be better addressed qualitatively.

#### *Cost of Service Provided*

Analysis of data from the Medical Expense and Personnel Reporting System (MEPRS) and the Standard Finance System (STANFINS) identified two general categories of relevant costs associated with the CAMO. The categories included set up costs and costs for sustained operations. The one-time set up costs to establish the CAMO involved renovations to BAMC, initial outfitting of furniture and equipment, and upgrades to the automated call distribution system. Personnel wages and contracts comprised the greatest portion of cost for sustained operations.

The initial agreement between BAMC and WHMC to establish the CAMO included provisions for cost share. The CAMO was defined as a Multi-Service Market asset, servicing the clinics and beneficiary population of BAMC and WHMC. The agreement provided that WHMC would shoulder 60 percent of the costs associated with the CAMO, leaving 40 percent for BAMC to pay.

Costs of the CAMO were isolated in MEPRS under the four-digit Functional Cost Code for the Patient Appointing System. The four-digit code for Patient Appointing System at BAMC is EKAB. The Patient Appointing System falls under Ambulatory Care Administration in MEPRS.

The set up costs represent the one-time costs associated with establishing the CAMO. Table 1 illustrates the total set up costs for the CAMO, as well as the portion

paid by BAMC. The Job Order Contractor Proposal (Appendix E) submitted by J&J Maintenance, Inc outlines the renovation costs for the CAMO. The initial outfitting of furniture included state of the art sound-deadening workstations with white noise generation for the operators. Although the Automated Call Distribution System replaced BAMC's preexisting system, the initial cost was still split between BAMC and Wilford Hall. The initial supplies included general office supplies and operator manuals.

Table 1

## Summary of Set Up Costs

	Total Cost	BAMC's Share
Renovation	\$ 726,372.07	\$ 290,548.83
Furniture	\$ 576,840.00	\$ 230,736.00
Automated Call Distribution System	\$ 560,000.00	\$ 224,000.00
Initial Supplies	\$ 21,437.71	\$ 8,575.08
	<u>\$ 1,884,649.78</u>	<u>\$ 753,859.91</u>

Initial staffing for the CAMO fluctuated over the first 12 months of operation. Staffing stabilized at 63 full time equivalents (FTE). Six part time employees to accommodate peak calling times were included in the 63 FTEs. The personnel costs, as other costs, were split between BAMC and WHMC. To maintain the proportion of expenses, management decided to staff the CAMO with 40 percent of the employees paid for by the Army and 60 percent of the employees paid for by the Air Force. The only military staff member working in the CAMO was a Captain from the Air Force.

Staffing included a mix of government civilians and contractors. BAMC primarily used General Schedule (GS) employees to staff the CAMO. Only two contractors were hired by BAMC. The 16 GS employees from the previously existing Patient Appointing Service transitioned to fill positions in the CAMO along with three additional GS employees. Table 2 below shows the costs of staffing the CAMO for fiscal year 2005.

Table 2

## CAMO Staffing Costs for Fiscal Year 2005

	BAMC	WHMC	Total
GS Employee Compensation	\$ 736,049	\$ 353,219	\$ 1,089,268
Contract Personnel Compensation	\$ 21,059	\$ 846,024	\$ 867,083
Total Compensation	\$ 757,108	\$ 1,199,243	\$ 1,956,351
Percentage	39%	61%	100%

Note: BAMC contract personnel were only utilized during the last portion of the fiscal year.

The Air Force used a larger ratio of contractor to GS employees to staff the CAMO. Twenty-seven contractors were employed by the Air Force and only 10 GS employees. The flexibility provided by contract personnel was seen as a benefit during the initial phases. Now that staffing levels have stabilized however, the Air Force is considering converting the positions to General Schedule government employees.



*Quality of Care Provided*

This analysis evaluated quality of care based on interpersonal aspects of care. Patient satisfaction surveys provided the interpersonal aspects related to changes in perceived quality of care. The expectation was that interpersonal aspects of quality would improve with the implementation of the CAMO.

The Military Healthcare System Monthly Customer Satisfaction Survey provided the source for patient satisfaction scores. Baseline scores before implementation of the CAMO were collected from 361 encounters from fiscal year 2004. The CAMO was established in November 2004. The post-implementation evaluation period began in January 2005 to avoid skewing results with perceptions related to initial changes and the associated learning curve. A total of 292 encounters were collected during the post-implementation period. The analysis focused on six questions in the patient satisfaction survey pertaining to perceptions of the appointment process and general satisfaction. Patients rated the following questions on a 7-point scale.

Q5: How satisfied were you with the medical care received at the clinic?

Q6: Rate the number of days between the date that the appointment was made and the date actually seen by provider.

Q10a: How satisfied were you with the ease of making the appointment by phone?

Q10b: How satisfied were you with the access to medical care whenever needed?

Q10c: How satisfied were you with the process for obtaining referral for specialty care?

Q12: How satisfied were you with the clinic during this visit?

Table 3

Descriptive Statistics for Patient Satisfaction Scores				
Question Number	Period	<i>M</i>	<i>SD</i>	<i>N</i>
5	Pre-Implementation	6.15	1.260	361
	Post-Implementation	6.26	1.239	292
6	Pre-Implementation	4.57	1.721	361
	Post-Implementation	4.24	1.791	292
10a	Pre-Implementation	3.99	1.099	361
	Post-Implementation	3.75	1.161	292
10b	Pre-Implementation	3.95	1.114	361
	Post-Implementation	3.97	1.033	292
10c	Pre-Implementation	4.02	1.072	361
	Post-Implementation	3.97	1.095	292
12	Pre-Implementation	6.01	1.214	361
	Post-Implementation	6.20	1.110	292

The post-implementation means were compared to the pre-implementation means for each question. Table 3 summarizes the means of each question. Satisfaction increased slightly for questions 5, 10b, and 12. Satisfaction decreased for questions 6, 10a, and 10c. The analysis used a multivariate analysis of variance to compare the difference in satisfaction scores between periods. Table 4 shows the statistical significance of changes in means for each question after implementation. Changes in reported patient satisfaction were statistically significant for questions 6, 10a, and 12.

Table 4

Multivariate Analysis of Variance for Patient Satisfaction  
between Periods

Question Number	<i>F</i>	<i>p</i>
5	1.343	.247
6*	5.852	.016
10a*	6.881	.009
10b	.050	.823
10c	.310	.578
12*	4.280	.039

Note.  $n = 653$   $df = 1$  \* $p < .05$

*Access to Care*

Access is measured in five dimensions including accessibility, affordability, accommodation, acceptability, and availability. This analysis focused on the temporal aspects of accessibility. The telephonic hold times provided the measure for evaluation. Table 5 below shows the hold times and call volumes for selected clinics from BAMC. Clinics were selected based on availability of pre-implementation and post-implementation data. The only statistically significant change from the pre-implementation baseline occurred in the CAMO. The baseline for the CAMO was based on the BAMC Patient Appointing System telephone statistics. The Patient Appointing System only serviced primary care clinics for routine and follow-up appointments. No specialty clinics or urgent care appointments were handled by the Patient Appointing System. The increased average hold time for the CAMO accompanied the dramatic



growth in call volume. The CAMO expanded appointing responsibilities within BAMC and assumed the appointing mission for WHMC.

Table 5

Descriptive Statistics for Telephone Services in Selected BAMC Clinics				
Clinic	Hold Time (min:sec)		Call Volume per Month	
	Pre	Post	Pre	Post
Audiology	0:15	0:15	251	173
CAMO	0:46	4:40	19,906	55,223
ENT	0:15	0:19	331	376
OB/GYN	1:29	1:38	984	1,198
Ophthalmology	1:07	1:03	1,053	740
Pulmonary	0:11	0:12	228	195
Urology	0:24	0:36	546	597

### Discussion

The intent of this project was to use quantitative measures to evaluate changes in reported metrics from a baseline prior to implementation of the CAMO. Based on dynamic changes within the Military Healthcare System, quantitative measures were difficult to attribute solely to the CAMO. Nonetheless, the data collected are valuable to continued post-implementation monitoring. Qualitative measures posed challenges to define, but provide necessary feedback when evaluating a business practice in the healthcare industry.

*Cost of Service Provided*

Isolating relevant costs is important in all business decisions. This analysis focused on initial set up costs and costs of sustained operations. However, not all of these costs are relevant. Certain costs would have been incurred regardless of the CAMO's implementation.

Generally, all set up costs are considered relevant. The total set up cost for the CAMO was \$1.9 million. With the cost share, BAMC paid \$753,859 of the set up costs. The cost of renovating space in BAMC represented a total sunk cost of \$726,372. The furniture and initial supplies were also relevant. From BAMC's perspective the automated call distribution system does not represent a relevant cost, since it replaced a dated system and benefited the entire facility. The cost of the new call distribution system was \$560,000. Therefore, the relevant set up cost to BAMC equaled less than \$200,000.

Similar logic can be applied to the staffing of the CAMO. Only differential personnel costs should be considered in evaluating the cost of staffing the CAMO. Since BAMC employed 16 staff members in the Patient Appointing System prior to the CAMO, only the costs of the three new employees hired by BAMC are relevant. Of the \$736,049 BAMC paid in GS employee compensation, the relevant cost equaled \$81,993.

While efficiencies were gained in coordinating care within the multi-service market, no reduction in staffing occurred at the clinic level. Clinics retained receptionists for front desk activities and managing patient calls. The call volumes, shown in Table 5, remained generally unchanged after the implementation of the CAMO. Call volumes to

the clinics may decrease with time as patient behavior changes to conform to new business practices. No long-run savings in personnel are expected.

The Table of Distribution and Allowances (TDA) for Brooke Army Medical Center has not been updated to reflect the current staffing levels of the CAMO. Positions are still held under paragraph number 723, Patient Appointing System. The current TDA identifies the required strength as 18 GS employees, with only 2 authorizations. The director of the CAMO generated proposed joint requirements and authorizations (Appendix F). It is unlikely to have a joint manning document without a formal decision on governance for the San Antonio Multi-Service Market.

#### *Quality of Care Provided*

Changes in patient satisfaction were statistically significant for questions 6, 10a, and 12. Therefore, the null hypothesis for patient satisfaction ( $H_{03}$ ) is rejected. However, the alternate hypothesis of improved patient satisfaction does not hold true either. Patient satisfaction was expected to improve for the six areas of interest. Analysis showed that only three areas improved. Patients reported higher satisfaction with care at the clinic (Question 5), access to care when needed (Questions 10b), and with the clinic in general (Question 12). Satisfaction decreased for the number of days between making the appointment and seeing a provider (Question 6), ease of making an appointment by phone (Question 10a), and process for obtaining a referral for specialty care (Question 10c). Question 10a which asked patients to rate the satisfaction with the ease of making the appointment by phone represented the most significant decrease in satisfaction ( $F = 6.881, p < .01$ ).



This analysis considered clinical aspects for quality of care in addition to interpersonal aspects. However, dynamic changes within the Military Healthcare System prevented the analysis from isolating the impact of the CAMO on changes to reported metrics. Adoption of the electronic health record, command emphasis on data quality, and the proliferation of information management software occurred simultaneously with the establishment of the CAMO. The changes in business practices inhibit the ability to make legitimate comparisons between metrics from pre-implementation and post-implementation.

The most notable difficulty involved the analysis of administrative closure rates for referrals. In fiscal year 2003, BAMC began electronic entry of referrals and consults. However, providers also generated hard copy referrals and consults. The consulting physician would complete the record on the hard copy medical record, but often fail to enter the results electronically. As a result, the electronic referral or consult would be administratively closed even though the standard of care was delivered to the patient and documented on the hard copy medical record. The Military Healthcare System implemented AHLTA as the electronic medical record about the same time as the CAMO was established. While the CAMO has made a concerted effort to increase awareness and reduce the number of referrals administratively closed, changes in business practices associated with AHLTA implementation significantly reduced the artificially high rate of referrals administratively closed. Since a change in administrative closure rates occurred, the null hypothesis ( $H_{02}$ ) is rejected. However, it is not possible to attribute this change entirely to the implementation of the CAMO.

*Access to Care*

Telephonic hold times provided the primary measure for access in this analysis. Hold times remained consistent for the clinics, especially considering changes in call volumes. Therefore, the null hypothesis ( $H_{01}$ ) cannot be rejected. Findings do not support the fact that the CAMO increased access to healthcare by decreasing average telephone hold times for patients. The pre-implementation and post-implementation data were provided by the communication section of BAMC's Information Management Division. No data was available on hold times for clinics from WHMC.

Since inception, the director has tracked access metrics including hold times, number of appointments booked, and number of days from consult ordered to appointment date. The goal of the CAMO is to limit hold times to less than three minutes. The new automated call distribution system provides additional monitoring capabilities. Accurately forecasting call volumes and scheduling appropriate staff to handle peak periods are essential to limiting call volumes.

Analysis of survey results reveals that patient perceptions of access decreased from baseline levels. Satisfaction in the number of days between when the appointment was made and when the patient was seen by a provider decreased significantly ( $F = 5.852$ ,  $p < .05$ ). The number of days from consult to appointment, however, has consistently averaged 25 days. There was no significant change for satisfaction with access to care when needed or satisfaction with the referral process.

### Recommendations

Management must continue to monitor metrics for quality of care and access to care to identify trends. Changes to business practices require an adequate implementation period to allow time for patients and staff to adapt. Additional evaluation will verify whether or not an adequate implementation period was used. For instance, analysis of the post-implementation evaluation period identified decreases in three focus areas of patient satisfaction. Decreased scores may have been a reflection of the learning curve for patients and staff adapting to a new system. The study design attempted to account for the learning curve by beginning the post-implementation evaluation period three months after the CAMO was established. As more data becomes available, analysis could confirm decreased patient satisfaction or reveal improved satisfaction as business rules are solidified allowing patients and staff to become comfortable with the CAMO.

The multi-service market poses significant challenges for administrators. Policies and service-specific regulations impose additional constraints. Any errors in accounting or expense reporting result in under or over stating indirect costs. To avoid erroneously reporting step-down costs, careful consideration must be made to identify the correct accounting classification codes (APC) and functional cost codes (FCC). These two codes identify the activity generating the expense. When dealing with service specific funding, it is critical to track reimbursable expenses and appropriately allocate indirect costs to the correct cost center.

Current staffing requirements need to be documented and programmed on the Table of Distribution and Allowances (TDA) for Brooke Army Medical Center or the manning document for Wilford Hall Medical Center. The deadline for the 2009 TDA



update has already past. The earliest possibility for an updated TDA would be the 2010 version. The lack of unified governance for the San Antonio Multi-Service Market continues to be the main obstacle to accomplishing the updated manning document.

### Conclusion

The purpose of this analysis was to develop a framework to evaluate the impact of the Consult and Appointment Management Office (CAMO) on the delivery of healthcare in the San Antonio Multi-Service Market. The results of this analysis provided insight to the impact of the CAMO on healthcare within the San Antonio Multi-Service Market. Extending the post-implementation period provides an opportunity to continue to monitor the impact of the CAMO. Additionally, looking at trends and performance since implementation would provide additional support for the merits of the CAMO. Consolidation of appointing and referral management poses many challenges, but demonstrates sound strategic vision.

## References

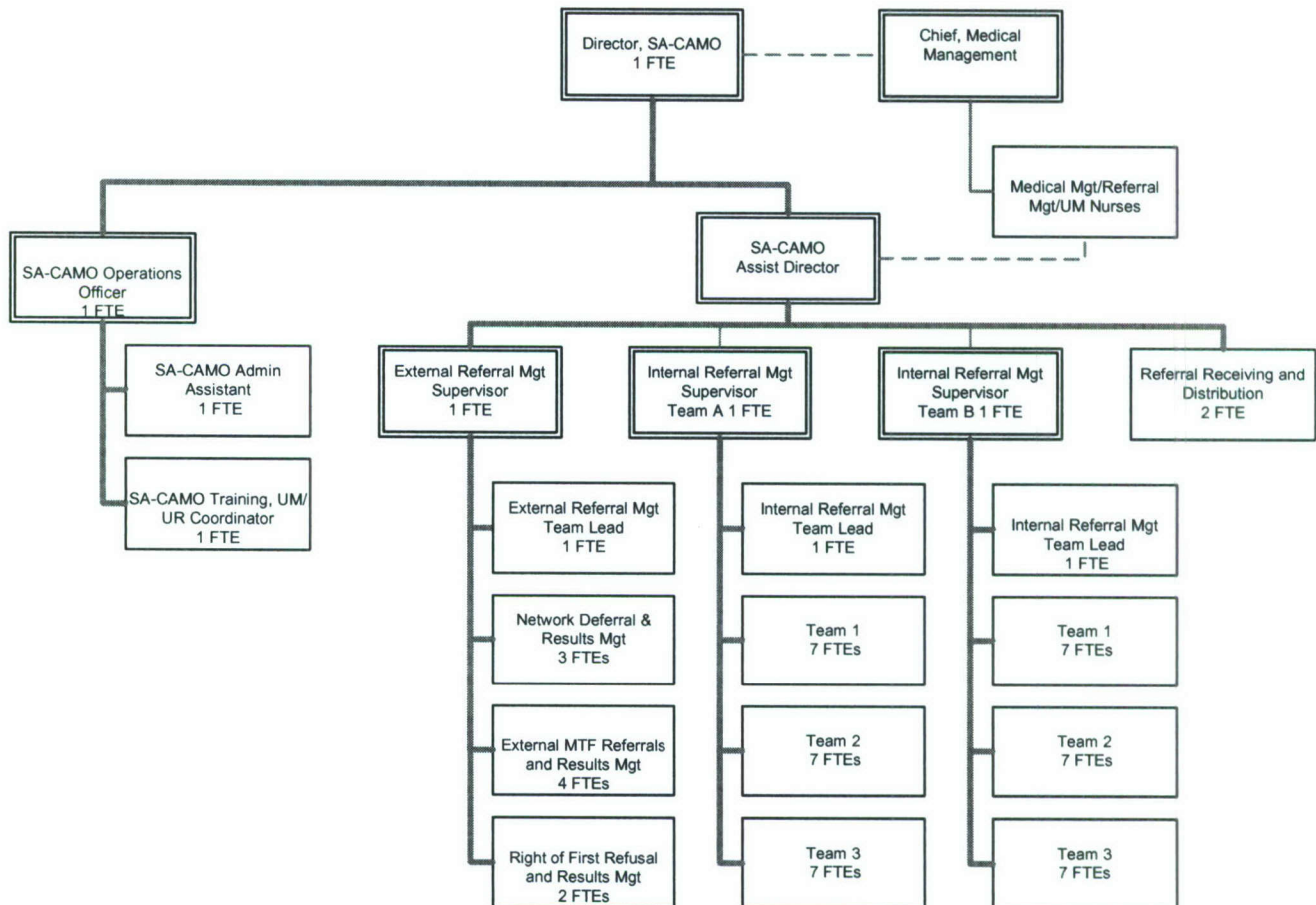
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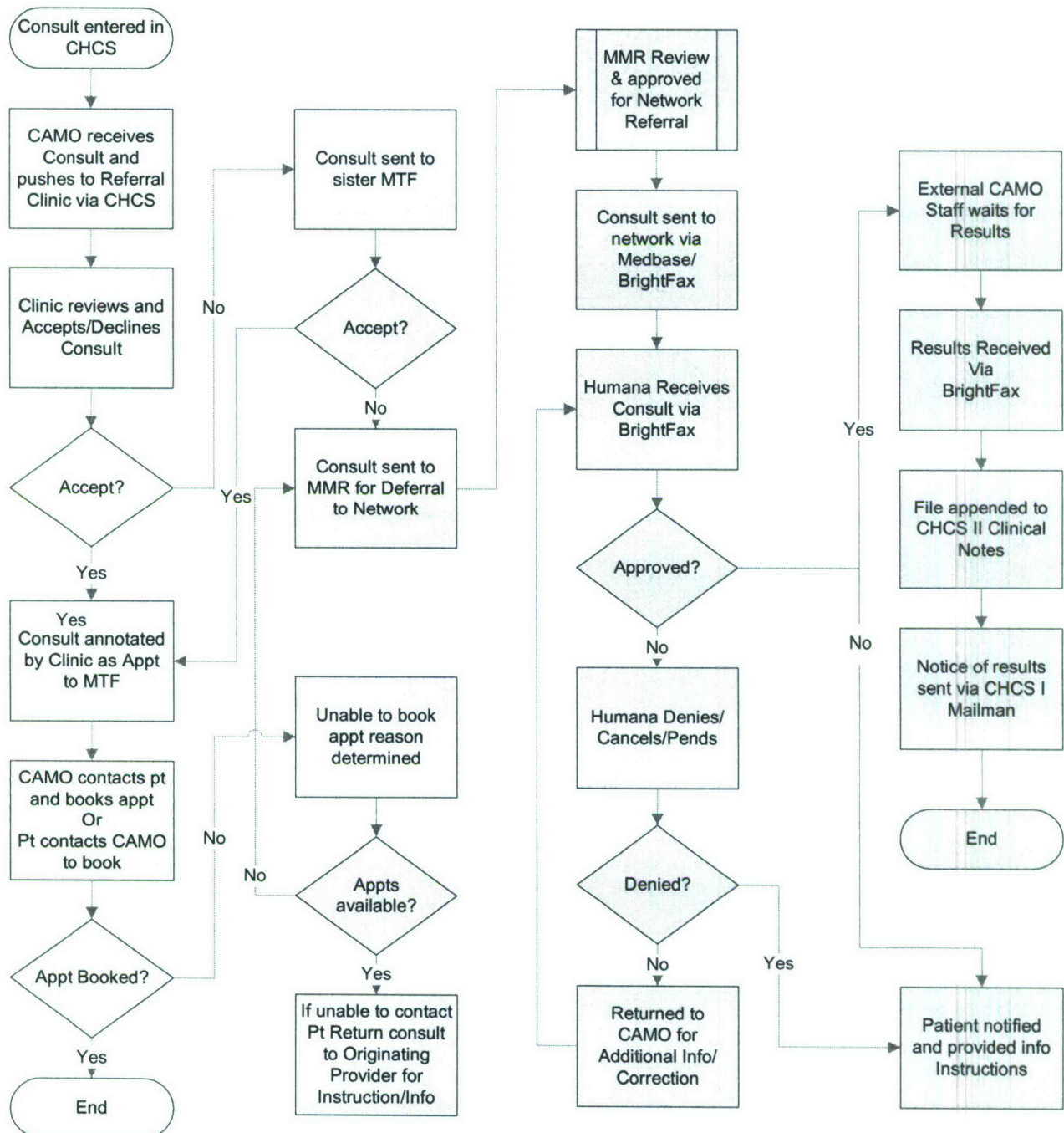
## Appendix A

## Organizational Structure of the Consult and Appointment Management Office



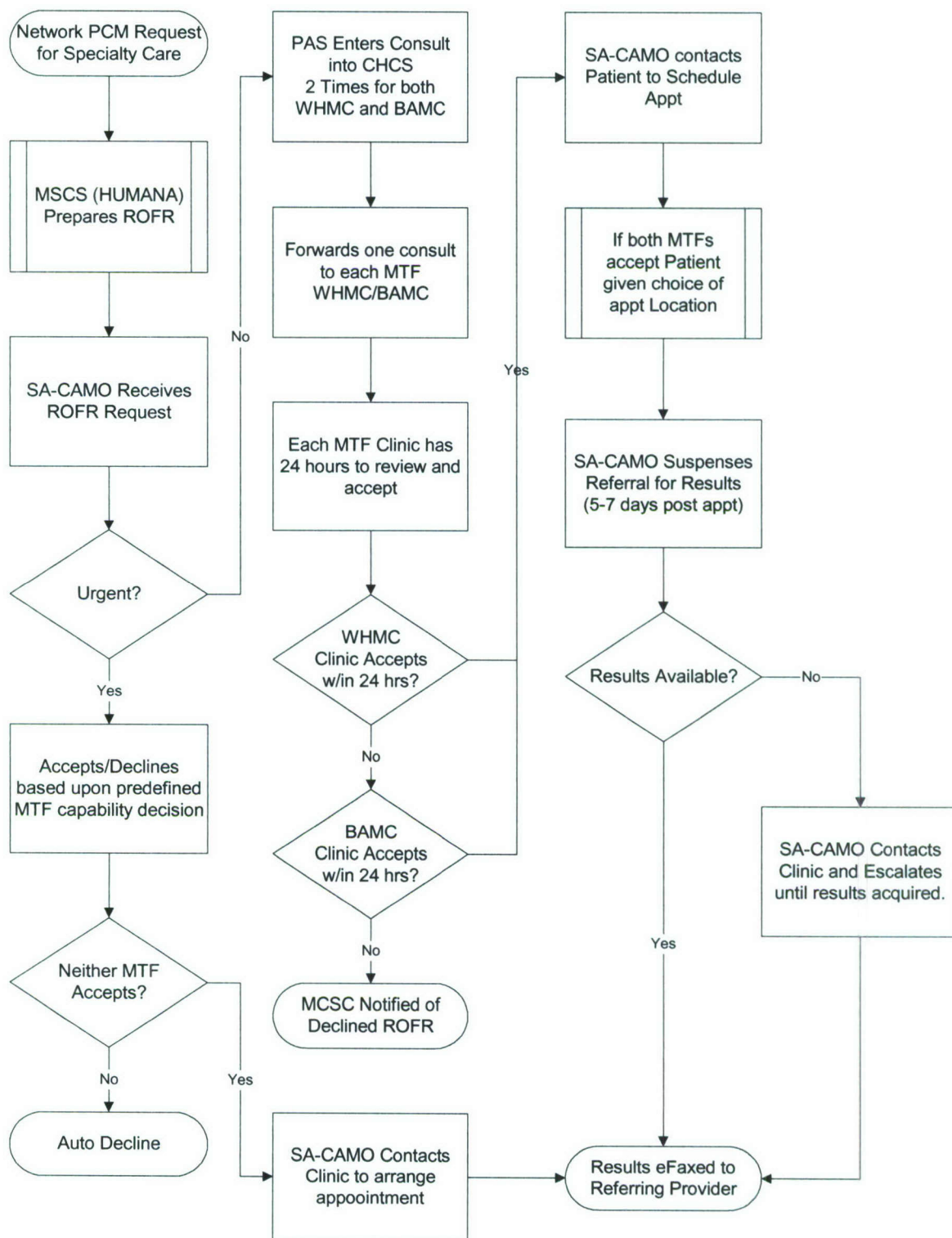
## Appendix B

## Internal Consult Process Flowchart



## Appendix C

## Right of First Refusal Process Flowchart





## Appendix D

## Operational Definitions for Variables

Average hold time: The average hold time is calculated by the automatic call distribution system and reported in minutes. The time begins once the caller is placed into the queue for the next available operator. The time ends either when the caller is connected to an operator or the caller abandons the system.

Abandonment rate: The abandonment rate is a percentage calculated by the number of calls disconnected prior to being answered by an operator divided by the number of calls that entered the queue.

Call volume: The call volume is a simple count of calls to a specific telephone number or clinic.

Patient Satisfaction Scores: The following questions will be analyzed from the TRICARE Customer Satisfaction Survey. Participants in the survey respond to questions on a seven-point bipolar scale, with seven being the most favorable.

Q5: How satisfied were you with the medical care received at the clinic?

Q6: Rate the number of days between the date that the appointment was made and the date actually seen by provider.

Q10a: How satisfied were you with the ease of making the appointment by phone?

Q10b: How satisfied were you with the access to medical care whenever needed?

Q10c: How satisfied were you with the process for obtaining referral for specialty care?

## Appendix D (continued)

Q12: How satisfied were you with the clinic during this visit.

Administrative closure rate: The administrative closure rate is calculated by dividing the total number of consultations from a given clinic administratively closed after 90 days due to inactivity by the total number of consultations generated by the clinic. The rate is reported as a percentage.

Percentage of consultations resulted: The percentage of consultations resulted is calculated by dividing the total number of consultations from a given clinic that resulted by the total number of consultations generated by a given clinic.

Clinic uses CAMO: This is a dichotomous variable measuring whether or not the clinic allows the CAMO to schedule appointments. Clinics that allow the CAMO to schedule appointments are coded 1, 0 otherwise. This variable applies only to the April 2005-March 2006 time period.

## Appendix E

## BAMC Renovation Estimate

## Job Order Contractor Proposal Cover Letter



Date: 09/16/2004  
 To: BAMC / US Army Corps Of Engineers  
 From: J & J Maintenance, Inc.  
 3755 Capital of Texas Hwy South Suite 355  
 Austin, TX 78704

Project No: C0114-W1-04  
 Project: Shell Space Changes

Location: Fort Sam Houston, Texas BAMC

## SUMMARY BY CSI

CSI	Description	Installation	Demolition
01	General Conditions	3,183.20	0.00
02	Site Work	18,828.75	0.00
03	Concrete	1,549.45	0.00
05	Metals	1,247.06	0.00
06	Wood & Plastic	3,465.67	0.00
07	Thermal & Moisture Protection	7,500.48	0.00
08	Doors & Windows	36,745.62	0.00
09	Finishes	271,216.93	0.00
10	Specialties	10,374.50	35.35
11	Equipment	190.81	948.69
15	Mechanical	394,433.09	9.51
16	Electrical	216,981.75	360.23

## SUMMARY BY FACTOR

Factor	Description	Installation	Demolition
H 1.2700	WEST CONTRACT - J&J - FY04	965,717.36	1,353.79
Installation Total		\$965,717.36	
Demolition Total		\$1,353.79	
Job Total with factor		\$967,071.15	
		Non Pre-Priced %	0.00%
		Job Total w/o Factor	\$761,473.35
Job Order Proposal Amount			\$967,071.15
ACF 0.7600 Adjustment			\$-232,097.07
Discount (Lump Sum)			\$-8,602.00
Proposal Grand Total			\$726,372.07

Contractor's Signature

Date

*Allen Johnson*  
*Kevin S. Anderson*

9-16-04

9/16/04



## Appendix F

## Proposed Manning Document for CAMO

San Antonio - Consult & Appointment Management Office					
Section	Req	Asgn	Position/Cont	Comp	Notes
<b>SA-CAMO Management</b>	<b>7</b>	<b>7</b>			
Director	1	1	GS-13	AF	
Assistant Director	1	1	GS-11	Army	
Operations Officer	1	1	TBD	AF	
Administrative Support	1	1	GS-05	AF	
UR/UM/Ed/Tng Lead	2	2	GS-06	Army	
Consult Routing	1	1	Contract	AF	
<b>Appointing Team A (CAMO)</b>	<b>21.5</b>	<b>21</b>			
Appointing Supervisor	1	1	GS-07	AF	
Internal Consult Agent Lead	1	1	GS-06	Army	
Appointing Agent	6	6	GS-05	Army	
Appointing Agent	1	1	GS-05	AF	
Appointing Agent	9	8.5	Contract	AF	
Appointing Agent	0.5	0.5	Contract	AF	Part time 0630-1030 M-F
Appointing Agent	1	1	Contract	AF - R	Part time 0630-1030 M-F
Appointing Agent	2	2	Contract	Army	
<b>Appointing Team B (CAMO)</b>	<b>21.5</b>	<b>20.5</b>			
Appointing Supervisor	1	1	GS-07	Army	
Internal Consult Agent Lead	1	1	GS-06	Army	
Appointing Agent	3	3	GS-05	Army	
Appointing Agent	2	2	GS-05	AF	
Appointing Agent	11	10	Contract	AF	
Appointing Agent	1.5	1.5	Contract	AF - R	Part time 0630-1030 M-F
Appointing Agent	2	2	Contract	Army	
<b>Referral MGT (CAMO) External</b>	<b>13</b>	<b>13</b>			
External Consult Supervisor	1	1	GS-07	AF	
External Consult Agent Temp Lead	1	1	GS-06	Army	
External Consult Agent	3	3	GS-05	Army	
External Consult Agent (ROFR)	1	1	GS-05	AF	
External Consult Agent	1	1	GS-05	AF	
External Consult Agent (ROFR)	1	1	Contract	AF	
External Consult Agent	4	4	Contract	AF	
Appointing Agent	1	1	Contract	AF	
<b>Total pers Reqd/Auth/Assign</b>	<b>63</b>	<b>61.5</b>			